

INFORMAZIONI PERSONALI **Marco Billò**



CARRIERA SCIENTIFICA

- Dal Novembre 2010 **Professore di II fascia**  
Dipartimento di Fisica, Università degli Studi di Torino
- Dicembre 1998 - Ottobre 2010 **Ricercatore**  
Dipartimento di Fisica, Università degli Studi di Torino
- Dicembre 1998 - Giugno 1999 **Visiting Professor**  
K.U. Luven, Belgium
- Novembre 1997 - Dicembre 1998 **Junior Fellow**  
K.U. Luven, Belgium
- Novembre 1995 - Novembre 1997 **Postdoctoral Fellow**  
NORDITA, Copenhagen, Danimarca, con una fellowship dell'INFN

QUALIFICHE

- Abilitazione Scientifica Nazionale**
- ASN 2018-2020 ? Abilitazione Scientifica Nazionale a professore di I fascia, valida dal 2020 al 2029 ?
- ASN 2012 Abilitazione Scientifica Nazionale a professore di I fascia, valida dal 2012 al 2020

STUDI

- 31/10/1995 **Ph. D. in Elementary Particle Physics**  
SISSA, Trieste. Supervisor: Pietro Frè. Tesi: *Gravitational Instantons and  $N = 2$  dualities.*
- Luglio 1990 **Laurea in Fisica.**  
Università degli Studi di Torino. Voto: 110/110 cum laude. Supervisor: Pietro Frè.
- Giugno 1985 **Diploma di Maturità Classica**  
Liceo Classico G. B. Beccaria, Mondovì. Voto: 60/60.

## ATTIVITÀ DI RICERCA

## Dati bibliometrici

Dati presi il 10/11/2029 dal database pubblico HEP-Spires, il più affidabile database per la comunità scientifica di fisica teorica delle alte energie.

Publicazioni	93 lavori, dei quali 73 pubblicati su riviste con peer review.
Citazioni	2533, delle quali 2477 riferite a lavori pubblicati. Numero medio di citazioni per lavoro: 27.2; numero medio di citazioni per gli articoli pubblicati su rivista: 33.9.
Indicatori	<i>h</i> -index 30.

## Ambiti di ricerca

Mi occupo di fisica teorica delle alte energie, ed in particolare di teoria quantistica dei campi (QFT) e di teoria delle stringhe. Su tali argomenti ho lavorato con molti collaboratori diversi, italiani e stranieri, colleghi, post-doc e dottorandi.

Linee di fondo	La motivazione principale della mia attività di ricerca è lo studio di metodi e idee per trattare anche in modo non-perturbativo le teorie di campo quantistico. In questa prospettiva mi sono occupato di teorie su reticolo, di teorie bidimensionali, di teorie con alto grado di simmetria (teorie supersimmetriche e/o conformi, topologiche), di teoria delle stringhe e di supergravità. In particolare, per quanto riguarda la teoria delle stringhe, la ho generalmente considerata come un framework consistente che suggerisce approcci nuovi e utili alle teorie di campo e al loro accoppiamento alla gravità. Questo anche quando i modelli di stringa sono esplicitamente analizzati tramite tecniche di world-sheet.
Riferimenti	Segue una lista, approssimativamente in ordine cronologico inverso, di argomenti riguardo ai quali ho dato qualche contributo. I riferimenti sono alla lista completa delle pubblicazioni riportata in calce a questo curriculum. I riferimenti posti in evidenza sono alle 12 pubblicazioni presentate ufficialmente per la presente procedura selettiva.
Teorie di campo Supersimmetriche	Teorie di Yang-Mills con supersimmetria estesa, principalmente in quattro dimensioni: aspetti perturbativi (relazione esplicita tra alcuni tipi di osservabili e il modello di matrici ottenuto tramite localizzazione [1,5,6,7,9,12]), difetti (surface defects [2,3,5,8,10,11,13], Wilson loops [6,9]), large- $N$ limit [1,20], aspetti non-perturbativi (dualità e anomalia modulare [10,13,14,16,17,18,19,20,21,23], contributi instantonici [P1,16,17], corrispondenza gravità/gauge a livello non-perturbativo [P3,24,P4,28]). Relazione con costruzioni di stringa (F-theory [29], sistemi di D-brane [27,47]). In [47] si studia il rapporto tra la dualità tra stringhe aperte e stringa chiusa e le cosiddette relazioni gauge/gravità nel contesto di teorie di gauge con supersimmetria $N = 2$ realizzate su brane frazionarie nel limite di orbifold di uno spazio ALE.
Teorie di campo conformi in $d > 2$	Defect Conformal Field Theory: aspetti generali [15], esempi in teorie di SYM $\mathcal{N} = 2$ [8,9], checks basati su teorie di gauge su reticolo [22]. In particolare, [15] è una delle referenze standard nell'ambito delle teorie conformi con difetti, di cui studia i vincoli sui correlatori bulk-to-defect e le Ward identity. [22] è uno dei primi lavori che ha studiato i "conformal data" di teorie con difetto e i correlatori bulk-to defect, in un esempio realizzato anche su reticolo, consentendo il confronto con le simulazioni.
Teoria di stringa efficace	Relazione con la deformazione $T\bar{T}$ [4]. Proprietà generali dell'azione di stringa efficace [25,P5]. Correlatori di loop di Wilson [26], interfacce [P7,37,39] e loop di Polyakov [P10,42] tramite tecniche di stringa e confronto con risultati di teorie di campo su reticolo.

- Istantoni dalla stringa Istantoni esotici [30,31,32]. Effetti non-perturbativi istantonici in presenza di flussi [33,34,35,36]. Background di RR e calcolo istantonico [P8,P9,38]. In [38] viene dimostrato come la particolare deformazione equivariante delle teorie di gauge detta  $\Omega$ -background introdotta da Nekrasov, che consente di valutare gli effetti istantonici tramite la tecnica della localizzazione sia realizzata in stringa da un opportuno background di Ramond-Ramond. Stringhe aperte e istantonici [45]; questo lavoro mostra come l'inclusione di D(-1) brane produca le soluzioni ed il calcolo istantonico in teorie di gauge supersimmetriche realizzati tramite sistemi di D-brane, ed è una referenza di riferimento a tale riguardo.
- Fisica delle D-brane Flussi di background in scenari di brane-world [P6,35,36]. Brane ad angoli o magnetizzate [40]. In questo lavoro, vengono sviluppate in modo sistematico le tecniche di stringa necessarie per lo studio di modelli di brane-world con brane magnetizzate o ad angolo tra di loro, importanti nella cosiddetta fenomenologia di stringa. Stringhe aperte in background non banali e teorie di gauge deformate [41,43,44]. D-brane su pp-waves [46]. D-branes in spazi di orbifold [47,49]. In [49] vengono costruiti i boundary states per D-branes site in orbifold fixed points, in analogia con la costruzione di Cardy dei boundary states consistenti in CFT razionali. D-brane non-BPS [53] e D-brane in teorie di tipo 0 [54]. D0 brane in un background non banale di supergravità [55]. Interazioni tra D-brane [P16,59,59,60]. Nella descrizione delle interazioni tra D-brane ho sviluppato in particolare la descrizione delle brane tramite boundary states, e le referenze [59,60] sono state tra le prime ad utilizzarli a fondo in questo contesto.
- Teorie di Yang-Mills bi-dimensionali Teorie dei Yang-Mills in due dimensioni (YM2) e la teoria dei coverings [48,52]. Relazione tra YM2 e la matrix string theory [P12,56].
- Teorie di gauge a temperatura finita Aspetti analitici di teorie di gauge su reticolo, in particolare in relazione alla transizione di deconfinamento [61,62,63,P19,64,67].
- Supergravità e teoria delle stringhe Dualità di AdS/CFT [50,51]. Embedding gravitazionale delle teorie efficaci alla Seiberg-Witten, limite rigido di compattificazioni di Calabi-Yau e Kahler [58,P17]. Simmetrie e dualità in teorie efficaci di supergravità per compattificazioni di stringa [P20,65,66]. Teorie con twist topologico [P21,68]. Stringhe, spazi ALE e istantonici gravitazionali [69,70]. In [69] viene costruita la teoria superconforme bidimensionale corrispondente al  $\sigma$ -model su uno spazio targhetta 4-dimensionale asintoticamente localmente euclideo (ALE).

### Presentazioni, talks, seminari

Ho effettuato dei talk su invito presso molte istituzioni, tra le quali per esempio il CERN, l'Institut Henri Poincaré di Parigi, la L.M.U. Muenich, l'università di Utrecht, la SISSA di Trieste, la K.U. Leuven, l'U.L.B. di Bruxelles, l'Università di Berna, il Nordita di Stoccolma. Ho inoltre parlato a molte conferenze e workshops, tra i quali, ad esempio, il workshop Strings at the LHC and in the Early Universe al K.I.T.P., Santa Barbara, Aprile 2010, e il workshop Geometry of Strings and Fields al G.G.I. Institute, Firenze, Settembre 2013.

### Partecipazione a progetti di ricerca

- Europei MPNS COST Action MP1210 *The String Theory Universe*. EC Human Potential Programme MRTN-CT-2004-005104 *Constituents, Fundamental Forces and Symmetries of the Universe*. RTN network project HPRN-CT-2000-00131 *The quantum structure of spacetime and the geometric nature of fundamental interactions*. TMR programme ERBFMRX-CT96-0045.

- Nazionali MIUR-PRIN Contract 2015MP2CX4 *Non-perturbative Aspects Of Gauge Theories And Strings*. MIUR-PRIN contract 2009KHZKRX-007 *Symmetries of the Universe and of the Fundamental Interactions*. MIUR-PRIN-2005023102 contract *Strings, D-branes and Gauge Theories*. MIUR-PRIN-2003023852 contract *Physics of fundamental interactions: gauge theories, gravity and strings*.
- Locali Compagnia di San Paolo contract *Modern Application of String Theory (MAST) TO-Call3-2012-0088*

## Referaggio

- Riviste internazionali Ho svolto e svolgo frequentemente l'attività di peer reviewing per diverse riviste del settore, tra le quali JHEP e Nucl. Phys. B, riviste di riferimento per gli ambiti su cui lavoro.

## Valutazione

- Borse FELLINI Nel 2019 ho agito da valutatore per la seconda call e nel 2018 per la prima call del progetto FELLINI (INFN Marie Skłodowska-Curie COFUND Fellowship Programme)
- VQR Nel 2016 ho agito da valutatore nell'ambito della VQR 2011-2014
- Piscopioa Nel 2013 ho agito come valutatore per la selezione dei progetti per il PISCOPIA Fellowship Program - Università di Padova
- Esami finali di Ph. D Sono stato presidente o membro delle commissioni esaminatrici della discussione di Ph. D per R. Conti, L. Giaccone, A. Mezzalira, D. Musso, R. Nicoletti (Torino), S. Bonansea, M. Buzzegoli, L. Lenzini (Firenze), P. Gregori (Torino, Bruxelles), M. Bianchi, M. Birrone, A. Mariotti (Milano Bicocca), A. Banaudi (Milano), S. Pasquetti (Parma), M.N. Muteeb (SISSA)
- Esami di ingresso al Ph. D Nel 2010 sono stato membro della commissione di ammissione al XXVI ciclo del Dottorato in Fisica e Astrofisica di Torino
- Post-doc Nel 2014 sono stato membro della commissione per l'assegnazione di una borsa post-doc per stranieri dell'INFN (bando 16726) destinata a Torino.
- Commissioni di concorso Nel 2006 sono stato membro di commissione per un posto da ricercatore presso l'Università di Cagliari

## ESPERIENZA DIDATTICA

### Corsi di laurea triennale e magistrale

- Dall'a.a. 2017/18 *Complementi di Meccanica Quantistica* (Meccanica quantistica relativistica, basi di teoria dei campi quantistica), 6 c.f.u. (48 ore).
- Dal 2013/14 al 2019/2020 *Introduzione alla Teoria dei Gruppi* Introduzione alla Teoria dei Gruppi. Parte riguardante i gruppi discreti e la teoria delle rappresentazioni dei gruppi discreti e di Lie, 3 c.f.u. (24 ore).
- Dal 2012/13 *Introduzione alla Meccanica Statistica*, 3 c.f.u. (24 ore).
- Dal 2011/12 *Fisica generale per studenti del corso di laurea in Matematica della Finanza (MATFIN)*, 9 c.f.u. (72 ore sino al 2016/2017, 24 ore dal 2017/2018).
- 2010/11 *Tecniche Informatiche per la Fisica* 3 c.f.u. (24 ore).
- Dal 2006/07 al 2011/2012 *Meccanica Quantistica* per il corso di laurea in Matematica, 7 c.f.u. (56 ore).
- Dal 2001/02 al 2005/06 *Introduzione alla Teoria dei Gruppi*, 48 ore

2000/01 e 2001/02 *Meccanica (esercitazioni)*. 70 ore il primo anno, 35 il secondo.

Video-registrazioni Il mio corso di Fisica per la laurea in MATFIN è stato uno dei primi corsi video-registrati nell'ambito di un progetto rivolto alla fruizione da parte degli studenti disabili, vedi <https://matfin.i-learn.unito.it/course/view.php?id=111>, e costituisce ora un corso di Fisica di base offerto sulla piattaforma SciVOLI del nostro Ateneo, vedi <https://elearning.unito.it/scivoli/course/index.php?categoryid=3>.

### Scuole internazionali di dottorato

Dal 2014 Dal 2014 (con l'eccezione di una singola tornata) tengo le 12 ore di lezioni su *String amplitudes* per il corso di *Introduction to bosonic String Theory* all'interno della prestigiosa *Joint European Doctoral school on String Theory*. Tale scuola è organizzata congiuntamente dalle università di Amsterdam, Bruxelles, Ginevra e Parigi col supporto dell'istituto Solvay e riunisce studenti di dottorato di queste università e non solo. Il corso ha sempre riscosso un grande apprezzamento da parte degli studenti nelle valutazioni ex-post, e per questo viene riproposto regolarmente

2015 *Introduction to Instantons in QM and QFT and to Seiberg-Witten Theory*, corso di 9 ore durante la *School on Instantons in Supersymmetric Field Theories, String Theory and Applications*, IPM, Tehran 2-8 Febbraio 2015.

2011 *D-branes: perturbative and non-perturbative applications to SUSY gauge theories (part II)*, corso di 6 ore presso la scuola di dottorato LACES al GGI institute di Firenze, tenutasi dal 28 Novembre al 16 Dicembre 2011.

### Corsi di dottorato

Dal 2001 Ho tenuto svariate volte il corso di 10 ore su *Non-perturbative field configurations* per il programma di dottorato in Fisica e Astrofisica dell'Università di Torino.

2001[0.25cm] Corso di 6 ore su *2d Gauge theories as String theories* per il corso di Dottorato in Fisica dell'Università of Parma.

### Supervisione

Dottorandi Sono stato il relatore dei seguenti studenti del corso di Dottorato in Fisica e Astrofisica dell'Università di Torino: Fabio Lonegro, Livia Ferro, Roberto Pellegrini, Davide Vadacchino e Alessandro Nada (in co-supervisione con M. Caselle), Daniele Ruggeri (in co-supervisione con M. Trigiante), Paolo Gregori (in co-tutela internazionale con l'U.L.B. Bruxelles, co-relatore F. Ferrari), Francesco Galvagno.

Sono stato relatore di 18 studenti della laurea triennale in Fisica, di 2 della laurea triennale in Matematica della Finanza e dell'Assicurazione e di 13 studenti della Laurea magistrale in Fisica o della precedente laurea specialistica in Fisica delle interazioni fondamentali. Sto seguendo al momento due studenti di laurea triennale e due magistrali.

### ESPERIENZA ORGANIZZATIVA

#### Conferenze e scuole

Sono stato nel comitato organizzatore delle seguenti conferenze, workshops e scuole internazionali:

2018 *50 years of the Veneziano model: from dual models to strings, M-theory and beyond*, GGI institute, Firenze, 11-15 Maggio, 2018

- 2018 *Supersymmetric Quantum Field Theories in the Non-perturbative Regime*, GGI institute, Firenze, 02 Aprile - 11 Maggio 2018
- 2003 *RTN Winter School on Strings, Supergravity and Gauge Theories*, Torino, 7-11 Gennaio 2003. Editor dei proceedings, pubblicati su *Fortschritte der Physik*, Vol 52, no 2-3 (February-March 2004).
- 2002 Workshop dell'European RTN network *The quantum structure of spacetime and the geometric nature of fundamental interactions*, Leuven, 13-19 Settembre 2002. Editor dei proceedings, pubblicati su *Class. Quantum Grav.* 20 (2003) 321-579.
- 2000 Scuola su Quantum aspects of gauge theories, supersymmetry and quantum gravity, Torino, 26 Gennaio- February 2 Febbraio 2000. Editor dei proceedings, pubblicati su *Class. Quant. Grav.* 17 (2000) 3377-3597.

### Incarichi istituzionali

- Dal 2018 Membro della giunta di Dipartimento  
Membro del Consiglio della Biblioteca del Dipartimento di Fisica
- Dal 2010 Membro del Collegio dei docenti del Dottorato in Fisica e Astrofisica dell'Università di Torino
- 2010-2017 Membro del Consiglio della Scuola di Dottorato in Scienze della Natura e Tecnologie Innovative dell'Università di Torino
- Dal 2002 Membro della Commissione Orientamento del Dipartimento, che si occupa ora anche dell'outreach. In questi anni ho dunque organizzato, e a volte iniziato, vari tipi di attività volte a illustrare i nostri corsi agli studenti delle scuole superiori.: visite all'istituto e ai suoi laboratori, tavole rotonde, conferenze, seminari presso il nostro istituto e/o presso istituti superiori,...

## OUTREACH

### Attività dirette agli studenti superiori

- Relatività Ho insegnato per 7 volte un corso intensivo di 10-12 ore di introduzione alla Relatività speciale e generale, durante attività residenziali nel weekend dedicate agli studenti negli ultimi anni delle scuole superiori, denominate *Campus di Matematica Fisica e Sport*, vedi <http://www.campusmfs.it/>. Il corso è sempre stato seguito da numerosi studenti, intorno a 40-50 in media. Ho anche tenuto lezioni più brevi sullo stesso argomento in alcune scuole superiori o durante attività dedicate agli studenti superiori, come ad esempio la *Scuola di Fisica 2016* organizzata dall'Università di Torino.

### Attività dirette ad un pubblico generico

- Conferenze Ho tenuto diversi talks volti alla disseminazione della Fisica. Ad esempio, nell'Aprile 2017 ho tenuto una conferenza intitolata *Sviluppi della Relatività Einsteniana: la Supergravità*, all'interno di un ciclo di conferenze intitolato *emphSeralmente*, in Grugliasco, che ha avuto un'uditorio notevole, di circa 350 persone.
- Convegni Ho partecipato come relatore all'edizione 2016 e 2018 del *Convegno G. B. Beccaria*, appuntamento annuale di divulgazione scientifica organizzato dal Liceo Vasco-Beccaria-Govone di Mondovì. L'intervento alla prima edizione è stato pubblicato sui *Quaderni dei Convegni G.B. Beccaria*, edizioni Araba Fenice.

## PRODUZIONE SCIENTIFICA

## Lista completa dei lavori pubblicati

Ai lavori pubblicati viene attribuito un numero in ordine cronologico inverso. Vengono presentati in due liste separate gli articoli su rivista con referee e i proceedings.

## Articoli su rivista (70)

- 1 M. Beccaria, M. Billò, F. Galvagno, A. Hasan and A. Lerda, “ $\mathcal{N} = 2$  Conformal SYM theories at large  $\mathcal{N}$ ,” JHEP **09** (2020), 116 doi:10.1007/JHEP09(2020)116 [arXiv:2007.02840 [hep-th]].
- 2 S. K. Ashok, M. Billò, M. Frau, A. Lerda and S. Mahato, “Surface defects from fractional branes. Part II,” JHEP **08** (2020), 058 doi:10.1007/JHEP08(2020)058 [arXiv:2005.03701 [hep-th]].
- 3 S. K. Ashok, M. Billo, M. Frau, A. Lerda and S. Mahato, “Surface defects from fractional branes. Part I,” JHEP **07** (2020), 051 doi:10.1007/JHEP07(2020)051 [arXiv:2005.02050 [hep-th]].
- 4 E. Beratto, M. Billò and M. Caselle, “ $T\bar{T}$  deformation of the compactified boson and its interpretation in lattice gauge theory,” Phys. Rev. D **102** (2020) no.1, 014504 doi:10.1103/PhysRevD.102.014504 [arXiv:1912.08654 [hep-th]].
- 5 L. Bianchi, M. Billò, F. Galvagno and A. Lerda, “Emitted Radiation and Geometry,” JHEP **01** (2020), 075 doi:10.1007/JHEP01(2020)075 [arXiv:1910.06332 [hep-th]].
- 6 M. Billò, F. Galvagno and A. Lerda, “BPS wilson loops in generic conformal  $\mathcal{N} = 2$  SU(N) SYM theories,” JHEP **08** (2019), 108 doi:10.1007/JHEP08(2019)108 [arXiv:1906.07085 [hep-th]].
- 7 M. Billo, F. Fucito, G. P. Korchemsky, A. Lerda and J. F. Morales, “Two-point correlators in non-conformal  $\mathcal{N} = 2$  gauge theories,” JHEP **05** (2019), 199 doi:10.1007/JHEP05(2019)199 [arXiv:1901.09693 [hep-th]].
- 8 S. K. Ashok, S. Ballav, M. Billò, E. Dell’Aquila, M. Frau, V. Gupta, R. R. John and A. Lerda, “Surface operators, dual quivers and contours,” Eur. Phys. J. C **79** (2019) no.3, 278 doi:10.1140/epjc/s10052-019-6795-3 [arXiv:1807.06316 [hep-th]].
- 9 M. Billo, F. Galvagno, P. Gregori and A. Lerda, “Correlators between Wilson loop and chiral operators in  $\mathcal{N} = 2$  conformal gauge theories,” JHEP **03** (2018), 193 doi:10.1007/JHEP03(2018)193 [arXiv:1802.09813 [hep-th]].
- 10 S. K. Ashok, M. Billo, E. Dell’Aquila, M. Frau, V. Gupta, R. R. John and A. Lerda, “Surface operators in 5d gauge theories and duality relations,” JHEP **05** (2018), 046 doi:10.1007/JHEP05(2018)046 [arXiv:1712.06946 [hep-th]].
- 11 S. K. Ashok, M. Billo, E. Dell’Aquila, M. Frau, V. Gupta, R. R. John and A. Lerda, “Surface operators, chiral rings and localization in  $\mathcal{N} = 2$  gauge theories,” JHEP **11** (2017), 137 doi:10.1007/JHEP11(2017)137 [arXiv:1707.08922 [hep-th]].
- 12 M. Billo, F. Fucito, A. Lerda, J. F. Morales, Y. S. Stanev and C. Wen, “Two-point Correlators in N=2 Gauge Theories,” Nucl. Phys. B **926** (2018), 427-466 doi:10.1016/j.nuclphysb.2017.11.003 [arXiv:1705.02909 [hep-th]].
- 13 S. K. Ashok, M. Billo, E. Dell’Aquila, M. Frau, R. R. John and A. Lerda, “Modular and duality properties of surface operators in N=2\* gauge theories,” JHEP **07** (2017), 068 doi:10.1007/JHEP07(2017)068 [arXiv:1702.02833 [hep-th]].

- 14 S. K. Ashok, M. Billo, E. Dell'Aquila, M. Frau, A. Lerda, M. Moskovic and M. Raman, "Chiral observables and S-duality in  $\mathcal{N} = 2^*$   $U(N)$  gauge theories," JHEP **11** (2016), 020 doi:10.1007/JHEP11(2016)020 [arXiv:1607.08327 [hep-th]].
- 15 M. Billò, V. Gonçalves, E. Lauria and M. Meineri, "Defects in conformal field theory," JHEP **04** (2016), 091 doi:10.1007/JHEP04(2016)091 [arXiv:1601.02883 [hep-th]].
- 16 M. Billó, M. Frau, F. Fucito, A. Lerda and J. F. Morales, "S-duality and the prepotential of  $\mathcal{N} = 2^*$  theories (II): the non-simply laced algebras," JHEP **11** (2015), 026 doi:10.1007/JHEP11(2015)026 [arXiv:1507.08027 [hep-th]].
- 17 M. Billó, M. Frau, F. Fucito, A. Lerda and J. F. Morales, "S-duality and the prepotential in  $\mathcal{N} = 2^*$  theories (I): the ADE algebras," JHEP **11** (2015), 024 doi:10.1007/JHEP11(2015)024 [arXiv:1507.07709 [hep-th]].
- 18 S. K. Ashok, M. Billò, E. Dell'Aquila, M. Frau, A. Lerda and M. Raman, "Modular anomaly equations and S-duality in  $\mathcal{N} = 2$  conformal SQCD," JHEP **10** (2015), 091 doi:10.1007/JHEP10(2015)091 [arXiv:1507.07476 [hep-th]].
- 19 S. K. Ashok, M. Billó, E. Dell'Aquila, M. Frau, R. R. John and A. Lerda, "Non-perturbative studies of N=2 conformal quiver gauge theories," Fortsch. Phys. **63** (2015), 259-293 doi:10.1002/prop.201500012 [arXiv:1502.05581 [hep-th]].
- 20 M. Billo, M. Frau, F. Fucito, A. Lerda, J. F. Morales, R. Poghossian and D. Ricci Pacifici, "Modular anomaly equations in  $\mathcal{N} = 2^*$  theories and their large- $N$  limit," JHEP **10** (2014), 131 doi:10.1007/JHEP10(2014)131 [arXiv:1406.7255 [hep-th]].
- 21 M. Billo, M. Frau, L. Gallot, A. Lerda and I. Pesando, "Modular anomaly equation, heat kernel and S-duality in  $\mathcal{N} = 2$  theories," JHEP **11** (2013), 123 doi:10.1007/JHEP11(2013)123 [arXiv:1307.6648 [hep-th]].
- 22 M. Billó, M. Caselle, D. Gaiotto, F. Gliozzi, M. Meineri and R. Pellegrini, "Line defects in the 3d Ising model," JHEP **07** (2013), 055 doi:10.1007/JHEP07(2013)055 [arXiv:1304.4110 [hep-th]].
- 23 M. Billo, M. Frau, L. Gallot, A. Lerda and I. Pesando, "Deformed N=2 theories, generalized recursion relations and S-duality," JHEP **04** (2013), 039 doi:10.1007/JHEP04(2013)039 [arXiv:1302.0686 [hep-th]].
- 24 M. Billo, M. Frau, F. Fucito, L. Giacone, A. Lerda, J. F. Morales and D. R. Pacifici, "Non-perturbative gauge/gravity correspondence in N=2 theories," JHEP **08** (2012), 166 doi:10.1007/JHEP08(2012)166 [arXiv:1206.3914 [hep-th]].
- 25 M. Billo, M. Caselle, F. Gliozzi, M. Meineri and R. Pellegrini, "The Lorentz-invariant boundary action of the confining string and its universal contribution to the inter-quark potential," JHEP **05** (2012), 130 doi:10.1007/JHEP05(2012)130 [arXiv:1202.1984 [hep-th]].
- 26 M. Billo, M. Caselle and R. Pellegrini, "New numerical results and novel effective string predictions for Wilson loops," JHEP **01** (2012), 104 [erratum: JHEP **04** (2013), 097] doi:10.1007/JHEP01(2012)104 [arXiv:1107.4356 [hep-th]].
- 27 M. Billo, M. Frau, L. Gallot and A. Lerda, "The exact 8d chiral ring from 4d recursion relations," JHEP **11** (2011), 077 doi:10.1007/JHEP11(2011)077 [arXiv:1107.3691 [hep-th]].
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curriculum Vitae

Prof. Dr. Elena Botta

Academic career:

- Studies of physics, University of Turin
- Physics Degree
- PhD degree
- Researcher in Experimental Physics, University of Turin
- Associate Professor in Experimental Physics, University of Turin – current position

Research:

Research associate to Istituto Nazionale di Fisica Nucleare (INFN) since 1999

CERN registered user since 1993

Experiments on Nuclear Physics at Intermediate Energies:

- Obelix Collaboration at CERN: study of antineutron annihilation on nucleons and nuclei
- FINUDA Collaboration at INFN-LNF: study of Lambda-Hypernuclei production and decay
- PANDA Collaboration: study of double-Lambda Hypernuclei production and decay
- SKS Collaboration: search for Xi-hypernuclei (E05 exp.) and hypernuclear  
gamma-ray spectroscopy (E13 exp.)

Experiments on Heavy-Ion Collisions:

- ALICE Collaboration: study of Hypernuclei production in heavy-ion collisions

Recent publications:

- S. Acharya et al., "Measurement of the Low-Energy Antideuteron Inelastic Cross Section", Phys. Rev. Lett. 125 (2020) 162001
- S. Acharya et al., "Production of (anti-)3He and (anti-)3H in p-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV", Phys. Rev. C 101 (2020) 044906
- S. Acharya et al., " $^3_{\Lambda}H$  and  $^3_{\bar{\Lambda}}\bar{H}$  lifetime measurement in Pb-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV via two-body decay", Phys. Lett. B 797 (2019) 134905
- S. Acharya et al., "Multiplicity dependence of (anti-)deuteron production in pp collisions at  $\sqrt{s} = 7$  TeV", Phys. Lett. B 794 (2019) 50
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# Manuel Dionisio Da Rocha Rolo

## Current position

*Tecnologo III-liv (Dipendente a tempo indeterminato, Istituto Nazionale di Fisica Nucleare, Torino*

*Professore a Contratto, Dipartimento di Fisica, Universita degli Studi di Torino*

## Fields of Expertise

2016 -

2018 -

Architecture, System and Circuit Design of Application Specific Integrated Circuits  
Instrumentation for High Energy Physics, Astrophysics, Medical and Industrial applications

Integrated Analogue and Digital Circuit Design for Radiation Detectors Front-end electronics for low-power and fast timing applications

Readout electronics for photodetectors and fast sensors

## Previous Positions<sup>1</sup>

- 2014 - 2015 Research Fellow at INFN (Assegno di Ricerca Tecnologica Senior), Torino (IT)
- 2013 - 2014 Senior Manager for Microelectronics at PETsys Electronics SA, Oeiras (PT)
- 2010 - 2014 Researcher at LIP - Laboratorio de Instr. e Fisica Exp. de Particulas, Lisbon (PT)
- 2009 - 2009 Research Engineer at CMP - Circuits Multi-Projets, Grenoble (FR)
- 2008 - 2009 Researcher at Institute of Telecommunications, Aveiro (PT)
- 2007 - 2008 Product and Test Research Engineer at Qimonda, Porto (PT)

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<sup>1</sup>Detailed Description on Annex I



## Professional Track

### Technological Activity

- 2018 - Design of integrated electronics for CMOS DMAPS.
- 2016 - Design of cryogenic integrated electronics for the DarkSide Experiment.
- 2014 - Design of the low-noise front-end electronics for the CGEM Inner-Tracker of the BESIII Experiment.
- 2014 - Development of high resolution timing integrated electronics.
- 2014 - Development of high-voltage monolithic sensors.
- 2013 - 2014 Design of a time-readout chip for the strip detectors of the PANDA Experiment.
- 2010 - 2014 Development of mixed-signal integrated electronics for SiPM readout on Time-of-Flight Positron Emission Tomography detectors.
- 2009 - 2009 Development and test of self-powering Smart CMOS and MEMS Integrated Sensors.
- 2008 - 2009 Development of instrumentation for next generation networks.
- 2007 - 2008 Product and Test Engineering of DRAM components.

### Coordination and Management

- 2018 - Scientific Coordinator of the INFN CSNV Call Project "ARCADIA"
- 2016 - BESIII Coordinator for the On-Detector Electronics for the CGEM Inner Tracker
- 2017 - Darkside L2 Manager for Integrated Electronics
- 2016 - Darkside Institutional Board Member, Local Coordinator at INFN Torino
- 2018 - President of Tender Committee (Commissione di Gara) for the selection of a CMOS foundry for development and production of silicon sensors. (Atto GE n. 11412 del 13.07.2017, total budget 12 M EUR)"
- 2011 - Reviewer for the Nuclear Instruments and Methods in Physics Research Journal, Microelectronics Journal, Journal of Instrumentation, IEEE Transactions on Nuclear Science

### Technology Transfer and Outreach

- 2018 - Teaching: Contract Professor for Microelectronics at University of Turin.
- 2017 - Patent: "Sensore integrato di radiazione ionizzante e di particelle ionizzanti".
- 2014 - Technology Transfer: Chief designer of a 1024-pixel ASIC for fast-timing on a major technology transfer between INFN and Industry.
- 2012 - Patent: "Reading device and method for measuring energy and flight time using silicon photomultipliers".
- 2014 - Lecturer: PicoSEC-MCNet training on electronics and DAQ systems for radiation detectors, Lisbon, Portugal
- 2019 - Lecturer: Novel Trends in Silicon Detectors, VIII International Course "Detectors and Electronics for High Energy Physics, Astrophysics, Space Applications and Medical Physics", Padova, Italy
- 2019 - Lecturer: High-Speed Digital Circuits, IEEE SSCS Topics on Microelectronics, Milano, Italy

### Publications

Author or co-author of 129 technological and scientific papers (source Web of Science ResearcherID, 22-05-2019).

## Education

- 2014 PHD in Physics and Astrophysics, Universita' degli Studi di Torino (IT)
- 2010 MSC in Electronics and Telecommunications, Universidade de Aveiro (PT)
- 2007 LICENCIATURA (Laurea Magistrale) in Electronics and Telecommunications Engineering, Universidade de Aveiro (PT)

## Fellowships and Awards

- 2014 Research Fellowship at INFN (Assegno di Ricerca Tecnologica Senior)
- 2011 Research Grant for the design of Integrated Electronics for SiPM readout, in the framework of the EndoTOFPET-US. Funding Agency: EU FP7-HEALTH (PT)
- 2010 Research Grant for the design of Readout Electronics for PET Scanners. Funding Agency: Pet - Mammography II-b: AdI Agencia de Inovacao (PT)
- 2008 Research Grant, development of flexible hardware solutions for Next Generation Networks. Funding Agency: PT Inovacao (PT)

## Participation to International Collaborations

- 2016 - Darkside Collaboration, LNGS (IT)
- 2016 - BESIII Experiment at BEPCII, Beijing (PRC)
- 2016 - CMS Experiment at CERN, Geneve (CH)
- 2015 - RD53 Collaboration at CERN, Geneve (CH)
- 2010 - 2014 RD-18 Crystal Clear Collaboration at CERN, Geneve (CH)

## Selected Invited Talks

- 2019 *Status of the ARCADIA Project*, CEPC Workshop - EU Edition, Oxford, UK
- 2018 *Integrated front-end electronics for ultra-low background dark matter detection*, FEE 2018 - 11th International Meeting on Front-End Electronics, Jouvence, Canada
- 2017 *A custom readout electronics for the BESIII CGEM detector*, INSTR 2017 - Instrumentation for Colliding Beam Physics, Novosibirsk, Russia
- 2016 *SiPM Readout*, FEE 2016 - 10th International Meeting on Front-End Electronics, Krakow, Poland
- 2014 *TOFPET ASIC - status and perspectives*, MEDAMI 2014 - III mediterranean thematic workshop in advanced molecular imaging, Alghero, Italy
- 2014 *Amplitude and time to digital converters*, PicoSEC-MCNet training on electronics and DAQ systems for radiation detectors, Lisbon, Portugal
- 2013 *TOFPET ASIC: Low-power, low-noise, 64-channel IC for SiPM readout*, Fast Timing Workshop, Erice, Italy

## Technical Skills and Competences

Design of complex experiment-grade analogue, digital and mixed-signal integrated circuits;  
CAD/EDA tools for microelectronics design, design/application in Linux environment;  
Experience in high volume back-end facilities in the semiconductor industry, clean-room experienced (ISO6-ISO7-ISO8);  
Semiconductor reliability and failure analysis;  
Experience with Automated Test Equipments (Advantest T5500 series) and test program developments for integrated circuit production;  
Involvement on both working at product level and strategy definition for volume implementation of semiconductors;  
Proprietary tools for process integration, process engineering, test failure analysis of ICs;  
Test Setup development for ASIC characterization;  
Familiar with PIC programming and microprocessor based implementations;  
Knowledge on Xilinx FPGA based application/development;  
Hands on Transmission lines and Time Domain Reflectometry analysis, Vector Network Analyzer,  
Vector Voltmeter, Smith Chart Analysis.

## Computer skills and Competences

Programming languages: Assembly, ATL, C, VBA, OCEAN/SKILL;  
Hardware Description: VHDL;  
Reconfigurable system development: Xilinx ISE Design Suite;  
Analogue IC design: Cadence DFW, Virtuoso Schematic and Layout Composer, Spectre and HSpice (model/simulation), Calibre and Assura Verification and Extraction Tools (DRC, LVS, RCX/LPE);  
Digital IC design: Cadence DFW application/design, NCLaunch, NC VHDL Simulator, SimVision, Encounter RTL Compiler;

## Language skills

**Portuguese:** Mother tongue

**English:** Understanding: C1 - Speaking: C1 - Writing: C1

**Italian:** Understanding: C1 - Speaking: C1 - Writing: C1

**French:** Understanding: B2 - Speaking: B1 - Writing: B1

**Spanish:** Understanding: B2 - Speaking: B1 - Writing: B1

## ANNEX I: Detailed description of Professional Track

- 01/05/2018 - **Contract Professor at Universita degli Studi di Torino (IT)**  
Teaching activities on Microelectronics, Physics Department of University of Turin.
- 04/01/2016 - **Staff Research Engineer at INFN, Torino (IT)**  
Mixed-Signal ASIC design. Research, design and commissioning of CMOS integrated electronics for radiation detectors. Project management and coordination of PhD Students and Post-Doc Fellows on ASIC design activities.
- 03/04/2014 - **Research Fellow at INFN, Torino (IT)**  
31/12/2015 Mixed-Signal ASIC design for Time-of-Flight applications, development of analogue and digital front-end electronics for radiation detectors. Design coordination of a 1024 pixel mixed-signal ASIC for commercial applications.
- 15/11/2013 - **Senior Manager at PETsys Electronics SA, Oeiras (PT)**  
01/04/2014 Senior Manager for Microelectronics. Responsibilities include the management of the design, test and commissioning of integrated front-end electronics for PET scanners.
- 04/01/2010 - **Researcher at LIP - Lab Instr Fisica Exp de Particulas, Lisbon (PT)**  
01/04/2014 Mixed-Signal ASIC design for Time-of-Flight applications, development of analogue and digital front-end electronics for radiation detectors. Responsibilities include chip top-level integration and floorplanning, development of analogue and digital blocks, chip verification, sign-off and submission.
- 15/04/2009 - **Research Engineer at CMP - Circuits Multi-Projets, Grenoble (FR)**  
31/12/2009 Definition of test specifications for heterogeneous chip structures, IC Layout physical design and prototype testing. Research coordination with external laboratories for new products development.
- 06/10/2008 - **Researcher at Institute of Telecommunications, Aveiro (PT)**  
31/03/2009 Integrated Circuits and Systems Laboratory, Portugal Telecom Inovacao: Research activities on flexible hardware solutions for Next Generation Networks. Specification development for integration solutions (FPGA/CPU/DSP based) on multi technology wireless base station routers.
- 10/09/2007 - **Product and Test Research Engineer at Qimonda, Porto (PT)**  
23/09/2008 Development of Product technology for DRAM Memory Components; Electrical analysis of customer rejects, application fails and component related production problems; Responsibility for product memory test, technical interface for the Back-End production sites during Product Sustaining Phase; Ensure manufacturability, Back-End yield, and process optimization after product ramp-up; Support test equipment enabling; Definition and implementation of new test coverage, co-working with Design Centres and production locations in Europe, USA and Asia;

Last updated: May 22, 2019

## SHORT CURRICULUM VITAE Mario Edoardo BERTAINA

Mario Edoardo Bertaina is Associate Professor at the Physics Department of Torino University and has a research assignment with INFN Sez. Torino. His research has been conducted always in the field of cosmic ray science participating to ground- and space-based experiments such as EAS-TOP, KASCADE-Grande, Pierre Auger Observatory and JEM-EUSO. Recently, he has been involved in meteor studies with the PRISMA and FRIPON networks. Regarding the space-based observation of ultra-high energy cosmic-rays he is the Global Analysis Coordinator of the JEM-EUSO collaboration and member of the POEMMA Collaboration. He has been national coordinator of the JEM-EUSO project, a project of Great Relevance of the Italian Ministry of Foreign Affairs with Japan in the domain of science and technology between 2012-2019. He is national coordinator of the scientific analysis of the TUS space telescope funded by INAF/ASI. He is/was local coordinator of different space projects funded by INFN and ASI (JEM-EUSO, Mini-EUSO, EUSO-SPB). Between 2011 and 2015 he has been appointed as member of the National Committee of Astroparticle Physics of INFN (Commissione II).

### A SELECTION OF RECENT PUBLICATIONS:

- 1) D. Gardiol et al. (PRISMA Coll.), Cavezzo, the first Italian meteorite recovered by the PRISMA fireball network. Orbit, trajectory, and strewn-field, *Monthly Notices of the Royal Astronomical Society*, Vol. 501/1, pag.1215-1227 (2021).
- 2) F. Colas et al. (FRIPON Coll.), FRIPON: a worldwide network to track incoming meteoroids, *Astronomy & Astrophysics*, Vol. 644, A53 (2020).
- 3) Aab et al. (Pierre Auger Coll.), Measurement of the cosmic-ray energy spectrum above  $2.5 \times 10^{18}$  eV using the Pierre Auger Observatory, *Physical Review D*, Vol. 102/6, 062005 (2020).
- 4) Aab et al. (Pierre Auger Coll.), Features of the Energy Spectrum of Cosmic Rays above  $2.5 \times 10^{18}$  eV using the Pierre Auger Observatory, *Physical Review Letters*, Vol. 125/12, 121106 (2020).
- 5) Aab et al. (Pierre Auger Coll.), A 3-year sample of almost 1600 elves recorded above South America by the Pierre Auger Cosmic-Ray Observatory, *Earth and Space Science*, Vol. 7/4, e2019EA000582 (2020).
- 6) Khrenov B.A. et al. (TUS Coll.), An extensive-air shower-like event registered with the TUS orbital detector, *Journal of Cosmology and Astroparticle Physics*, Issue 3, 033 (2020).
- 7) L. Anchordoqui et al. (POEMMA Coll.), Performance and Science of Extreme Multimessenger Astrophysics for ultrahigh-energy particles, *Physical Review D*, Vol. 101/2, 023012 (2020).
- 8) G. Abdellaoui et al. (JEM-EUSO Coll.), Ultra-violet imaging of the night-time earth by EUSO-Balloon towards space-based ultra-high energy cosmic ray observations, *Astroparticle Physics*, 111, pag.54-71 (2019).
- 9) M. Battisti et al. (JEM-EUSO Coll.), Performance results of the trigger logic implemented in EUSO-SPB, *Nuclear Instruments and Methods A*, Vol. 936, pag.349-350 (2019).
- 10) Apel W.D. et al. (KASCADE-Grande Coll.), Search for large-scale anisotropy in the arrival direction of cosmic rays with KASCADE-Grande, *Astrophysical Journal*, Vol. 870/2, 91 (2019).

# CURRICULUME VITAE

Name, Surname **Simona Giordanengo**

Email

Nationality

Web page

- **EDUCATION**

2010 PhD in Physics  
Università degli Studi di Torino, Physics Department, Italy

2002 Master in Physics  
Università degli Studi di Torino, Physics Department, Italy

- **CURRENT POSITION**

Since 2018 Researcher (permanent position)  
Istituto Nazionale di Fisica Nucleare, Division of Torino, Italy

- **PREVIOUS POSITIONS and FELLOWSHIPS**

2016 – 2018 Researcher (non-permanent position)  
Istituto Nazionale di Fisica Nucleare, Division of Torino, Italy

2014 – 2015 Grant for Young Researcher  
Istituto Nazionale di Fisica Nucleare, Division of Torino, Italy

2005 – 2013 Researcher (non-permanent position)  
Istituto Nazionale di Fisica Nucleare, Division of Torino, Italy

- **AWARDS**

2015 Guglielmo Marconi Prize for **Technological Transfer** of the Società italiana di Fisica, Roma, Italy

2014 Nicola Chiari Prize of National Instruments for the **best Application of Measurement and Automation**, NI Day 2014, Roma, Italy.

2010 INFN Francesco Resmini Prize, for the **best PhD thesis in the field of Physics of accelerators and new technologies**, Roma, Italy.

2009 Nicola Chiari Prize of National Instruments for the **best Application of Measurement and Automation**, NI Day 2009, Milano, Italy.

- **SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

Since 2010 2 Postdoc/ 6 PhD/ 9 Master Students Università di Torino, Physics Department.

- **ORGANISATION OF SCIENTIFIC MEETINGS**

2017 Member of the Scientific Organizing Committee of the Workshop on “Innovative Delivery Systems in Particle Therapy” in Torino, Italy (50 participants)

- **INVITED LECTURES**

2020 *New Detectors for Beam Monitoring in Particle Therapy*, XXIX Giornate di Studio sui Rivelatori 2020, Cogne, Italy

2015 *Dose Delivery Instrumentation*; “CERN Accelerator School on Accelerators for Medical Application”, Wien, Austria

2012 *Adroterapia a CNAO*; INFN School “XXII Giornate di studio sui rivelatori 2012”, Torino.

- **INSTITUTIONAL RESPONSIBILITIES**

- 2019 – 2020 Member of the evaluation committee for the Award “Anna Piccotti” for the best Master Thesis on Particle Detector at the INFN of Torino, Italy.
- 2018 – 2020 Member of the Torino scientific and organization committee for the “Art&Science across Italy” project for scientific dissemination to secondary school students.

- **SCIENTIFIC PROJECTS and RESPONSABILITIES (Individual grants)**

- 2004 – 2012 Grants for the construction of the Dose Delivery System for CNAO (250.000 €)
- 2014 – 2015 INFN Grant for Young Researcher for the RIDOS project (150.000 €)

- **REVIEWING ACTIVITIES**

Reviewer for: 1. *Physics in Medicine and Biology*; 2. *Nuclear Instruments and Methods in Physics Research Section A*; 3. *Medical Physics (Int. J. of Medical Physics Research and Practice)*; 4. *Physica Medica – European Journal of Medical Physics (EJMP)*; 5. *Frontiers in Physics*

Editorial Board Member for *Applied Sciences*

- **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

- Since 2004 Member of the Particle Therapy Co-Operative Group (PTCOG)
- Since 2008 Member of the European Network for Light ion Hadron Therapy (ENLIGHT)
- Since 2010 Ass. Member of the Associazione Italiana di Fisica Medica (AIFM)
- 2013 – 2014 Ass. Member of the European Society for Radiotherapy and Oncology (ESTRO)

- **MAJOR COLLABORATIONS**

- Since 2004 Italian National Center of Oncological Hadrontherapy (CNAO), Pavia, Italy.
- 2004 – 2008 GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt, Germany
- 2007 – 2010 Paul Scherrer Institute (PSI), Villigen, Switzerland

- **MAIN PUBLICATIONS**

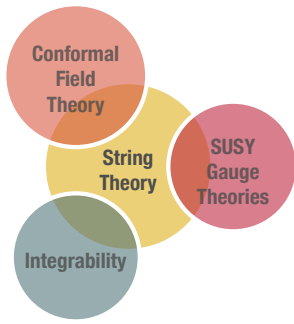
- Vignati A, **Giordanengo S**, et al *A new detector for the beam energy measurement in proton therapy: a feasibility study*, Phys. Med. Biol. 65 (2020)
- Vignati A, **Giordanengo S**, et al *Beam Monitors for Tomorrow: The Challenges of Electron and Photon FLASH RT*, Front. Phys., 8:375. (2020)
- **Giordanengo S** et al *RIDOS: A new system for online computation of the delivered dose distributions in scanning ion beam therapy*, Physica Medica 60, 139-149 (2019)
- **Giordanengo S** and Palmans H *Dose detectors, sensors, and their applications* Medical Physics 45(11), (2018)
- **Giordanengo S** and Donetti M, *Dose Delivery Concept and Instrumentation*, CERN-2017-004-SP, Yellow Report Vol 1/2017
- **Giordanengo S**, Manganaro L and Vignati A *Review of technologies and procedures of clinical dosimetry for scanned ion beam radiotherapy* Physica Medica European Journal of Medical Physics 43 (2017)
- **Giordanengo S** et al. *The CNAO Dose Delivery System for ion pencil beam scanning radiotherapy*, Medical Physics 42, 263 (2015)

I authorize the processing of my personal data under D.Lgs. n.196 of 30/06/2003

Torino, 25/02/2021

Simona Giordanengo





# Domenico Orlando

Researcher at INFN

## Affiliations

INFN – Torino division

staff researcher

Albert Einstein Center for Fundamental Physics – University of Bern

Kavli IPMU – University of Tokyo

## Address

## Previous Appointments

### Mail

2015–2017 **University of Bern** postdoc and lecturer

2013–2015 **École Normale Supérieure (Paris)** junior research associate

### Web

<https://goo.gl/7ERTHd>

2011–2013 **CERN** fellow

2008–2011 **IPMU (Tokyo)** project researcher

2007–2008 **Université de Neuchâtel** postdoc

2006–2007 **Università di Milano Bicocca** postdoc

## Education

2002–2006 **PhD in String theory** *École Polytechnique (Paris)*  
String Theory: Exact Solutions, Marginal Deformations and Hyperbolic Spaces

2006 **Marie Curie Predoc** *Vrije Universiteit Brussel*

2001–2002 **Diplôme d'études approfondies** *École Normale Supérieure (Paris)*  
First year undergraduate study

1995–2002 **Master's degree in Nuclear Engineering** *Politecnico di Milano*

## Grants and Honors

2018 **INFN Grant “Strongly coupled CFTs at large quantum number”** INFN

2011 **CERN fellowship** CERN

2006 **Marie Curie Predoc fellowship** VUB

2002 **PhD fellowship Bourse Monge** *École Polytechnique*

## Professional qualifications

2015	<b>Abilitazione scientifica nazionale</b>	Italy
2013	<b>Qualification aux fonctions de maitre de conférences</b>	France

## Teaching

Nov 2019	<b>Introduction to Superstrings</b> Solvay Doctoral School	CERN
Nov 2019	<b>Conformal field theories</b> Nordic Winter School in Theoretical Physics	University of Southern Denmark
2016–2019	<b>PhD Coadvisor</b> Yuta Sekiguchi	University of Bern
2015–2018	<b>PhD Coadvisor</b> Orestis Loukas	University of Bern
2015–2020	<b>Advanced concepts of theoretical physics</b> Master's degree course	University of Bern
2016–2017	<b>Introduction to statistical field theory</b> Master's degree course	University of Bern
2010–2011	<b>Lectures on the Bethe Ansatz</b> Graduate course	University of Tokyo

## Service to the profession

2015–2017	<b>Editor</b> Advances in Mathematical Physics	
2005-present	<b>Referee</b> Classical and Quantum Gravity, JHEP, Journal of Physics A, Letters in Mathematical Physics, Mathematical Reviews, Physics Letters, The European Physical Journal, International Journal of Theoretical Physics, German Academic Exchange Service (DAAD)	
Aug 2020	<b>Organizer</b> Focus Week on Quantum Mechanical Systems at Large Quantum Number	IPMU of the University of Tokyo
May 2020	<b>Organizer</b> New Frontiers in Theoretical Physics: Cortona Young	Galileo Galilei Institute
Mar 2020	<b>Organizer</b> Italian String web seminar	<a href="https://web.infn.it/strings">https://web.infn.it/strings</a>
Nov 2019	<b>Organizer</b> Workshop: Integrable effective field theories and their holographic descriptions	Galileo Galilei Institute
Sep 2019	<b>Jury member</b> Molinari prize for Master's thesis in theoretical physics	Università di Torino
Aug 2019	<b>Organizer</b> Program: Quantum-Mechanical Systems at Large Quantum Number	SCGP Stony Brook
Jul 2018	<b>Organizer</b> The second international conference on Supersymmetric theories, dualities and deformations	Bern

Jul 2016	<b>Organizer</b> The first international conference on Supersymmetric theories, dualities and deformations	Bern
2011–2013	<b>Organizer</b> CERN-TH string seminars	CERN
May 2009	<b>Organizer</b> focus week: New invariants and wall crossing	IPMU
Jan 2008	<b>Organizer</b> RTN Winter School: Strings, supergravity and gauge theories	CERN
Oct 2006	<b>Scientific secretary</b> conference: 30 Years of supergravity	Paris
Oct 2006	<b>Scientific secretary</b> conference: Journée Joël Scherk	Paris